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ABSTRACT

The bonding experiences and attachment patterns of 12 adopted and 12 nonadopted 1-year-old infants were compared in order to test the hypothesis that an infant who is not able to bond with his or her primary caregiver soon after birth is at higher risk for the formation of insecure attachment relationships. Attachment of infants to their mothers was assessed according to the strange situation procedure designed by Ainsworth and Wittig (1969). All 12 of the nonadopted infants were classified as securely attached, whereas almost half of the adopted infants were classified as anxious avoidant. In comparison with adoptive mothers of anxious avoidant infants, adoptive mothers of securely attached infants reported having spent three times as many hours with their infants during the first day of placement. The data suggest that the first 24 hours after placement may be a sensitive period in the formation of a bond between the adoptive mother and infant. For some infants, the adoptive experience itself significantly increases the risk of subsequent attachment problems. (Author/RH)

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Bonding and Attachment in Adoptive and Nonadoptive Mother-Infant Dyads

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Abstract

The attachment patters of 12 adopted and 12 nonadopted one year old infants were compared in order to test the hypothesis that infants who are not able to bond with their primary caregiver soon after birth are at higher risk for the formation of insecure attachment relationships. Using the Ainsworth categories, all 12 of the nonadopted infants were classified as securely attached, whereas almost half (n=5) of the adopted infants were classified as anxious avoidant. Within the adoptive sample, mothers of securely attached infants reported having spent three times as many hours with their infants during the first day of placement as mothers of the anxious avoidant infants. The data suggest that the first 24 hours after placement may be a sensitive period in the formation of a bond between the adoptive mother and infant. For some infants, the adoptive experience itself significantly increases the risk of subsequent attachment problems.

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Bonding and Attachment in Adoptive and Nonadoptive Mother-Infant Dyads

The concept of bonding has been the subject of intense research and clinical study during the past decade. Particularly since Klaus and Kennell's publication of Maternal-Infant Bonding in 1976, the developmental literature has been awash in research and clinical reports confirming or refuting the importance of early maternal-infant bonding (Chess and Thomas, 1982; Egeland and Vaughn, 1981; Sugarman, 1977; Waters, 1978). Klaus and Kennell (1976) reported that bonding or failure to bond in the first hours after birth has highly significant consequences over an extended period of time. Specifically, those authors concluded that infants who failed to bond immediately after birth were distinguishable from their bonded peers on a number of interactional variables at the age of a year, and were at higher risk of being physically abused by their parents. Klaus and Kennell postulated the existence of a sensitive period immediately after birth, during which "it is necessary that the mother and father have close contact with their neonate for later development to be optimal" (p. 14).

Whereas bonding refers to a process which takes place (or fails to do so) in the first hours of life, attachment is a related but more complex concept which refers to behavior and attitudes developed over a more extended period of time. First introduced to the literature by Bowlby (1958), attachment refers to the dependency of one organism on another who is perceived as stronger and better able to cope with the world. In the developmental literature, attachment is frequently used

to describe the special relationship between a young child and his/her primary caregiver (Ainsworth, Blehar, Waters, & Wall, 1978; Lamb & Hwang, 1892; Leiderman, 1978; Sroufe & Waters, 1977). The quality of this relationship is believed to significantly affect the child's development of later emotional relationships (Bowlby, 1969). Bonding has been linked to attachment both theoretically and empirically. Some researchers have concluded that infants who are able to bond with their mothers in the first minutes and hours after birth develop stronger, more secure attachments to their mothers later on (Egeland & Vaughn, 1981; Klaus & Kennell, 1976, 1983; Sugarman, 1977).

There are two major shortcomings in most of the research which has concluded that a failure to bond immediately after birth is closely connected to later attachment problems or deficits. First, extensive generalization from animal studies to human behavior has characterized much of the literature. It is relatively clear that, among sub-human mammals at least, a bond between mother and offspring is formed soon after birth, and if something interfers with this process, it is seldom reversible (Hersher, Richmond, & Moore, 1963). The salient question is whether human mothers have the same biological imperative to relate to their young as do other mammals, and whether human infants are as hard-pressed as other animals to overcome a deprivation experience at this time. Little research has considered the human species' greater capacity for adaptation and cognitive mediation compared to our more distant mammalian relations.

A second shortcoming found in many of the human studies investigating the salience of bonding as a determinant of quality of attachment is that they have compared groups of full-term, healthy infants

who had extended postpartum contact with their mothers to groups of sick and premature infants who required immediate, and perhaps extensive separation from their mothers, often in a neonatal intensive care unit (NICU) (Egeland & Vaughn, 1981; Klein & Stern, 1971; Rode, Chang, Fish & Sroufe, 1981). Some studies of this type have found significant differences in the attachments of these two groups of infants to their mothers months and years later. Such findings are marred, however, by the confounding variable of the health problems of premature infants. That is, the possibility of the infant's early death could reasonably be expected to interact with the physical separation from mother, and could further impede the development of a secure attachment. Even when reunited with the mother after several weeks in the NICU, this type of infant often continues to have significant health problems which may affect the quality of relationship to mother.

Highly respected figures in the field of developmental psychology such as Bowlby (1982), Chess & Thomas, (1982) have argued that empirical evidence for the irreversible negative effects of a failure to bond in the first day(s) of life is lacking. Even Klaus and Kennell (1983) have softened their earlier stridency regarding the rigidity of the sensitive period, and now carefully make note of the adaptability of the human infant. Nevertheless, the concept of bonding has become recognized and widely accepted by the lay community. Expectant parents in childbirth education classes are encouraged to seek extended postpartum contact with their new baby, and many hospitals have altered delivery room procedures so that babies are not whisked away to the nursery immediately after birth.

The negative repurcussions of the current attention paid to bonding have been largely ignored by the research and medical communities. The literature reflects only the protests of some sensitive clinicians (Chess & Thomas, 1982) who worry whether, by laying such heavy emphasis on the importance of early bonding, we are creating unnecessary anxiety in mothers who, for whatever reason, cannot be with their infants immediately after birth. This group includes mothers in poor health, mothers who give birth in traditional hospitals, and adoptive mothers. The concern is that this emphasis on bonding may be creating heightened anxiety, and a self-fulfilling prophecy of failure among such mothers.

If the experience of early bonding is an crucial as many researchers have suggested, then infants who are deprived of such experience, or who are taken away from the caregiver to whom they have bonded, should show the effects of such deprivation in their subsequent attachment patterns. Thus, infants who are placed in an adoptive home, even though they may be full-term and physicallyhealthy, will have either no early bonding experience to a primary caregiver , or will have experienced the replacement of that caregiver by the adoptive parent. In either case, if the early bonding experience is as crucial as Klaus & Kennell suggest, then adopted infants should tend to demonstrate some attachment difficulties. An alternate possibility is that the initial experiences which adoptive mothers have with their infants may be analagous, in both form and function, to the postpartum bonding experience of the birth mother and child.

The literature on the long term effects of adoption is both sparse and contradictory. Some researchers have concluded that adoptees are significantly overrepresented in the populations seen by mental

health professionals (Elonen & Schwartz, 1969) and that adoptees are at higher risk for a variety of mental and emotional problems (Krasnow, 1969; Nemovicher, 1960; Schwartz, 1966; Simmons, 1979). Other researchers have reported that adoptees bear no increased risk for adjustment or behavioral problems compared to their non-adopted peers (Ferguson, Horwood, & Shannon, 1981). Indeed, Tizard (1977), in her longitudinal study comparing adoptees with children returned to their biological families after spending time in foster care, found the adoptees significantly better adjusted than the comparison group.

The present study investigates the bonding experiences and attachment patterns of adopted infants, to determine whether those patterns are significantly different than the attachment patterns of nonadopted infants.

Attachment behaviors can be elicited in a number of ways. To the infant or young child, any event which is experienced as threatening, such as separation from the primary caregiver, or being placed in an unfamiliar environment, will tend to increase the child's efforts to maintain closeness to his/her attachment figure. Specific attachment behaviors which might be demonstrated by an infant or child include verbal signaling, attempts to attain or maintain physical contact with the attachment figure, increased eye contact. Ainsworth and Wittig (1969) developed a standardized procedure for eliciting and measuring attachment behaviors in infants. This technique, known as the strange situation procedure, exposes the infant to a series of brief episodes which are designed to increase attachment behaviors.

In the procedure the infant is accompanied to a playroom by his/her caregiver where they are joined by a stranger. In subsequent three minute episodes the infant is left alone with the stranger, reunited

with the caregiver, left completely alone in the room, rejoined by the stranger, and, finally, reunited with the caregiver. The infant's attachment pattern is observed and then categorized as either secure, anxious avoidant or anxious resistant. Securely attached infants (type B) will play and explore freely during the preseparation episodes, and actively seek contact or interaction with the caregiver during the reunion episodes. Anxiously attached avoidant infants (type A) demonstrate less interaction with the caregiver, and indeed treat the caregiver and stranger much alike. This type of infant typically does not seek contact with the caregiver during the reunion episodes. Anxiously attached resistant infants (type C) display generally maladaptive behavior in the strange situation, which may be expressed as extreme anger in both separation and reunion episodes, or as extreme passivity. Previous research (Ainsworth et al., 1978; Waters,1978) suggests that the majority of infants (65-70%) seen in the strange situation will be classified as securely attached (type B), whereas 20-25% will appear anxious avoidant (type A) and 10-15% anxious resistant (type C). Rode et al. (1981) found this distribution to occur even among a sample of infants who had been separated at birth from the caregiver, a finding which contradicts the sensitive period hypothesis.

Method

Subjects

Subjects were 24 pairs of mother infant dyads; twelve biologically related mothers and infants were compared to twelve adoptive mother-infant dyads. Subjects were middle class, Caucasian mothers and their healthy, full-term, one year old infants. The biologically related dyads were referred to the study by a local pediatrician in private practice and the adoptive dyads were volunteers from two local adoption agencies (6 from each agency).

The two groups were matched for family income, education of both parents (with more than half of the parents in each group having a college education), number of siblings, age and health of child. Half of the mothers in each group did not work outside of the home. The two groups of parents differed significantly on two variables. The average age of adoptive mothers was 33 years while birth mothers averaged 29 years. The average length of marriage was different between the groups also, with adoptive parents married an average of 10.5 years and birth parents for 4.5 years. This variance reflects the fact that adoption agencies require applicants to be married several years before initiating the adoption process, which itself takes several years. In addition, the typical adoptive couple has an undetermined cause of infertility and therefore has tried for several years to become pregnant before turning to adoption.

Within the adoptive group, the age of the baby at placement varied considerably, from three days to 243 days. Seven of the children were placed before the age of one month; 5 were placed at 8 weeks

or older. All of those who were placed after the first week of life spent some time in foster care. The children who were older at the time of placement were more likely to have been in multiple foster homes prior to the adoptive placement.

Procedure

The attachment of the adopted and nonadopted infants to their mothers were compared using the strange situation procedure designed by Ainsworth & Wittig (1969). The procedure consists of 8 episodes during which the infant's behavior is alternately observed in the presence of his/her mother, a stranger, and alone, thereby approximating situations commonly confronted by infants in real life. The episodes are standardized for all subjects with the least stressful situations occuring first. The procedure has been widely used to study the attachment behaviors of one year old infants (Rosenberg, 1975; Bell, 1970) and is described in detail elsewhere (Ainsworth et al., 1978). The nature of the procedure required the use of two adjacent rooms connected by a one-way mirror for observation. The experimental room was comfortably furnished, with two chairs at one end of the room for the mother and stranger. A child's chair with toys on and around it was placed in the middle of the room. An experimenter and two female graduate students who served as observers were stationed behind the mirror, where the observers dictated their accounts of the infants' behavior into tape recorders. Each observer wore headphones which prevented her from hearing the other observer's dictation and allowed them both to hear the activity in the experimental room.

The two tapes obtained on each subject were later combined into a single typed transcript, which reflected all the observations made

by either observer. These data were subsequently coded on more than a dozen variables, including locomotion, contact, crying, visual and tactile exploration, and oral behavior, and provided one basis for comparison of the adoptive and birth samples. Transcripts of each subject were also used to do global ratings of the children, assigning each baby to one of the Ainsworth categories: A-anxiously attached avoidant; B-securely attached; or C-anxiously attached resistant.

The observers and coders were trained prior to the study, utilizing both live and video taped trial subjects. A total of four coders were trained who achieved an interrater reliability of .94.

Following the experimental procedure the mothers were interviewed by a trained clinician regarding their initial experiences with their infants. Nine questions were asked of each mother, 5 of which were open ended. The interviews took approximately 15 minutes each, and were tape recorded. Later, the tapes were transcribed and coded. Mothers were asked to describe and evaluate their initial experience with their infants, and their familiarity with the concept of bonding, which might indicate their level of preparation for parenthood and the amount of support they received. Mothers were asked to estimate the amount of physical contact they had with their infants during the first 24 hours following birth or placement. The mothers were also asked when they recalled feeling that their baby "belonged" to them. This information was used to determine a time frame within which bonding occured. For birth mothers, the method of delivery and other aspects of the birth environment were assessed. In the adoptive sample, it was determined whether the infant had been in a foster home before being placed for adoption, whether any information on the birth mother

was provided to the adoptive parents, and if so, whether such information had affected the adoptive mother's feelings about her infant.

Results

Two experienced raters independently assigned each of the infants to one of Ainsworth's three categories (A,B, or C). These raters achieved agreement on 23 of the 24 subjects. Because the results varied significantly from findings previously reported in the literature, two additional experienced raters repeated the procedure. This second pair of raters was unaware of the results of the first pair. Babies were ultimately assigned to a category for further analysis only if three of the four raters agreed on the appropriate category. Using this standard 23 of the 24 babies were coded. The one infant about whom the four raters were split (2-2) was dropped from further analysis.

Insert Table 1 about here

All 12 of the birth infants were assigned to category B (securely attached), as were 6 of the adopted infants. Five of the adopted infants were classified as Type A - anxiously attached, avoidant. A chi square for a 2 x 2 contingency table reveals this difference to be significant at the $p<.05$ level. The type A infants could not be distinguished from the type B infants on any of the demographic variables, including age of the infant when placed in the adoptive family.

The data were also analyzed by comparing the tabulated, coded behaviors of the two groups, on the microanalytic variables: locomotion,

contact, crying, etc. A 2 (groups) x 7 (episodes) repeated measures ANOVA was used, with episodes being the repeated measure within subjects. This analysis revealed no significant differences between the two groups on any of the twelve variables which were coded. The data also analyzed by comparing the type A to the type B babies within the adopted group. Again, the ANOVA yielded no significant differences between the two types.

The data also indicate no significant differences between the adoptive and nonadoptive mothers' reports of initial emotional experiences with their infants, nor were the two groups significantly different in the time period during which this affectional tie developed. Adoptive mothers reported feeling intense emotional responsiveness toward their infants following placement in a similar manner to the bonding experience reported by birth mothers. The degree of positiveness with which adoptive mothers recalled their initial contact with their infants was not correlated with the quality of attachment among the adoptive infants as measured by the experimental procedure.

Adoptive mothers did report spending an average of 19 hours of the 24 hours following placement in close proximity to their babies, compared to an average of 9.5 hours for birth mothers. This difference was significant at the $p<.005$ level, and probably reflects the still prevalent practice in hospitals of post delivery mother/infant separation. Similarly, birth fathers were reported as spending less than 3 hours of the 24 hours following birth in close proximity to their infants while adoptive fathers were reported (by their wives) to have spent more than 10 hours of the 24 hours following placement in close proximity to their infants. This difference was significant at the

$p<.01$ level. Again, this finding may reflect hospital prohibitions that necessarily limit the amount of time infants are available to their fathers. Birth mothers' breastfeeding might also contribute to less father-infant contact.

Within the adoptive sample, mothers of infants in the type A group reported spending an average of 5 of the first 24 hours in close physical contact with their infants while mothers of the type B infants reported spending an average of 16 of the first 24 hours in close physical contact with their infants. This difference was significant at the $p<.04$ level. Similarly, the amount of time fathers were

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Insert Table 2 about here

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reported to have spent in close physical contact with their adoptive infants distinguished the type A and B groups. In the type A group fathers reportedly spent an average of 4 hours in close physical contact or proximity with their infants while the type B group fathers spent close to 16 hours in close physical contact or proximity with their infants. This finding was significant at the $p<.05$ level.

Discussion

The distribution of infants in this study into the three Ainsworth categories differs from previous findings in two ways.

First, approximately half of the adopted infants in the study were not securely attached to their mothers, a finding which suggests support for Klaus and Kennell's sensitive period hypothesis. If the present sample is representative of the adopted population as a whole,

then this finding may help explain why some mental health workers report a disproportionate number of adopted persons among their clientele. Adoption per se may predispose the infant to attachment difficulties with his/her primary caregiver, a serious problem indeed if, as Bowlby (1982) suggests, "relationships in early life seem to affect all close relationships later" (p. 669).

Logic would suggest that the quality of the adopted infant's attachment to his/her mother would be affected by the age of the infant at the time of placement. However, in this study no statistical relationship or even such a trend exists between the age of the infant at placement and the attachment classification made at the age of one year. Indeed, the two infants who were oldest at the time of placement were judged to be securely attached, while all of the anxiously attached infants were placed before the age of ten weeks.

The distribution of nonadopted infants across the Ainsworth categories also varied from expectation in that they were a completely homogeneous group, all classified as securely attached. This finding probably reflects a sampling bias. The nonadoptive sample consisted entirely of volunteers from the practice of one pediatrician. These mothers were highly educated, relatively affluent primaparas, who responded to a written request for assistance in the advancement of scientific knowledge. They had, therefore, only that altruistic motive and perhaps a desire to display their precocious offspring. Since their participation carried with it no promise of intervention, it is reasonable to conclude that mothers having difficulties with their infants would have no motivation to participate.

The adoptive mothers' descriptions of their earliest contact with their infants suggests that they experienced a heightened state of emotional arousal and an intense desire to touch and be close to their new infant, psychologically analogous to the experience of the new birth mother. Further, this sort of experience was reported in a similar fashion by each of the adoptive mothers in this study, regardless of the age of the infant at the time of placement. Yet, at the age of twelve months, almost half of the adopted sample are not securely attached to their adoptive mothers.

Another finding of the present study may help to explain this phenomenon. Mothers of the securely attached, adopted one year old infants recalled having spent three times as many hours in close contact with their infants during the first day of placement as mothers of anxiously attached infants. Further, this difference held true for the fathers of the two groups of infants, in approximately the same proportions.

This finding puts the notion of a sensitive period in a new light. Just as other researchers have found postpartum mother-infant contact to be predictive of later behaviors, so does the present study find postplacement mother-infant contact to be predictive of subsequent attachment. The obvious, important difference between previous studies and this one has to do with the age of the infant. Sensitive period, if it is to be meaningfully applied in an adoptive situation, has to do with the initial point of maternal-infant contact, <u>not</u> with the age of the infant or the postpartum hormonal condition of the mother. Indeed, perhaps this definition, anchored as it is by the establishment of the interactive, mother-child system rather than the postgestational age of the infant, explains why a number of researchers have

failed to find long term negative consequences in studies of infants and mothers separated after birth (Rode et al.,1981).

What remains in need of explaining, however, is why, in this sample, some adoptive mothers chose to spend only 4 or 5 hours of the first day together with their new infant, while others spent 15 or 16 hours. These were not sick mothers, nor were they tired after long labors or at the mercy of rigid hospital rules. They were all healthy, presumably highly motivated, and in the familiar environment of their own homes. Why some of these women chose to remain relatively uninvolved with their long-awaited infant is not clear, and must be the subject of further study.

Another unanswered question is whether the differential amount of time which parents of securely attached infants and parents of anxiously attached infants spent with their babies during the first day of placement is the cause of the attachment deficit manifested at the age of one year, or whether it is merely descriptive of an enduring tendency. All else being equal, if the mothers of the anxiously attached infants had spent not 5, but 16 hours with their new babies on the first day of placement, would those babies have been securely attached at the age of one year? Or is the mother's retrospective report about the first day with her infant to be taken as a more general indicator of her interactions with her child over the entire course of that year? These important questions remain unanswered.

Clearly the results of the present study support the opinion of Chess & Thomas (1982) that the infant's capacity for bonding is not extinguished after the first days of life. More than half of the adopted infants in this study demonstrated secure attachments to their

mothers in spite of weeks or months having elapsed between the child's birth and the adoptive placement. This finding may comfort parents who, for whatever reason, must be separated from their infants for a prolonged period of time, as well as the health and social welfare professionals who work with these families. Even prolonged separations do not preclude the development of a secure attachment.

On the other hand, contrary to the findings of previous research (Tizard, 1977; Elonen & Schwartz, 1969; Fergusson et al.,1981) the present data do support the notion that adopted infants are at greater risk for the development of insecure attachment relationships to their primary caregiver, and the negative sequelae of such relationships. Since more than half of the adopted infants were securely attached to their mothers at the age of twelve months we must conclude that other variables, not investigated in the present study, account for the bimodal distribution of the infants in this sample.

Observational data gathered at the time of adoptive placement and at several points throughout the first year thereafter is crucial to determine the accuracy of the mother's subjective memory of the initial contact with her infant. In addition, numerous attitudinal and interactional variables might be studied to determine their contribution to the attachment process.

For instance, future research might investigate how long the couple had to wait for their adoptive infant, since the longer parenthood eludes a couple the more stress they may experience. Likewise, the waiting couple may romanticize the parental role and develop unrealistic expectations of their child; when finally presented with an ever-so-demanding infant who cannot immediately give the parents what they feel they deserve after years of frustration and pain, the parents may be set up for disappointment.

Infertility problems and the anxiety of waiting for adoption proceedings may both present strain in the marital system that preclude the development of healthy parenting skills. Was the importance of skin-to-skin contact and reciprocity not stressed as much to these parents or were other factors in their context responsible for less contact, such as personality variables, unresolved marital conflicts, infertility, inadequate parenting skills?

For health and welfare professionals concerned with primary and secondary prevention, it is especially important to identify any potentially problematic areas in the adoptive process which, given early intervention, might be alleviated. The bonding and attachment process for adopted infants needs further investigation which may necessitate changes in the current practices of adoption agencies, with more attention paid to ensuring optimal postplacement bonding experiences for the adoptive family.

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TABLE 1

Attachment Classification by Adoptive Status

	Adopted Infants	Non-Adopted Infants
Type A		
Anxious, Avoidant	5	0
Type B		
Securely Attached	6	12

Note: Excludes one adopted infant about whose attachment type the four raters were split (2-2).

$\chi^2(1) = 4.55$, $p < .05$.

(chi)

TABLE 2

Mean Number of Hours of Contact With Infant in the First Day of Adoptive Placement by Parent and Attachment Type

	Mothers	Fathers
Type A		
Anxious, Avoidant	5	4
Type B		
Securely Attached	16	16